

**Claims:**

1. A method of preparing ceramic nanoparticles loaded with one or more photosensitive drugs comprising the steps of:
  - a) preparing micelles entrapping the photosensitive drugs;
  - 5 b) adding alkoxyorganosilane to the micelles to form complexes of silica and the micelles;
  - c) subjecting the complexes of silica and micelles to alkaline hydrolysis to precipitate silica nanoparticles in which the photosensitive drug molecules are entrapped; and
  - 10 d) isolating the precipitated nanoparticles by dialysis..
2. The method of claim 1, wherein the alkoxyorganosilane is triethoxyvinylsilane.
- 15 3. The method of claim 1, wherein the micelles comprise AOT and 1-butanol.
4. The method of claim 1, wherein the alkaline hydrolysis is carried out by ammonia.
- 20 5. The method of claim 1, wherein the alkaline hydrolysis is carried out by an ammonium compound.
6. The method of claim 3, wherein the photosensitive drug is 2-devinyl-2-(1-hexyloxyethyl) pyropheophorbide.
- 25 7. A composition comprising ceramic nanoparticles in which one or more photosensitive drugs are entrapped by a method comprising the steps of:
  - a) preparing micelles entrapping the photosensitive drugs;
  - b) adding alkoxyorganosilane to the micelles to form complexes of silica
  - 30 and the micelles;
  - c) subjecting the complexes of silica and micelles to alkaline hydrolysis to precipitate silica nanoparticles in which the photosensitive drug molecules are

entrapped; and

- d) isolating the precipitated nanoparticles by dialysis.

8. The composition of claim 7, wherein the drug is 2-devinyl-2-(1-hexyloxyethyl) pyropheophorbide.
- 5 9. The composition of claim 7 further comprising a pharmaceutically acceptable carrier.
- 10 10. The composition of claim 7, wherein the alkaline hydrolysis is carried out by ammonia or an ammonium compound.
- 15 11. The composition of claim 7, wherein the size of the ceramic nanoparticles shows a unimodal distribution with an average size of about 30 nm in diameter.
12. A method of inhibiting the growth of cells comprising the steps of:
  - a) delivering to the cells a composition comprising ceramic nanoparticles in which one or more photosensitive drugs are entrapped by the method of claim 1, wherein the nanoparticles are taken up by the cell; and
  - b) exposing the cell to radiation, wherein said exposure to radiation results in production of reactive oxygen species and said reactive oxygen species inhibit the growth of the cells.
- 20 13. The method of claim 12, wherein the reactive oxygen species includes singlet oxygen.
- 25 14. The method of claim 13, wherein the photosensitive drug is 2-devinyl-2-(1-hexyloxyethyl) pyropheophorbide.
- 30 15. A method of reducing the growth of a tumor in an individual comprising the steps of:
  - a) administering to an individual in need treatment, a composition

comprising ceramic nanoparticles in which one or more photosensitive drugs have been entrapped by the method of claim 1;

- b) allowing the ceramic nanoparticles to be taken up by tumor cells; and
  - c) irradiating a region in which the tumor is present with radiation which
- 5 results in the production of reactive oxygen species by the photosensitive drug,  
wherein the production of reactive oxygen species results in reducing the  
growth of the tumor.

16. The method of claim 15, wherein the photosensitive drug is 2-devinyl-2-(1-hexyloxyethyl) pyropheophorbide.

17. The method of claim 15, wherein the composition comprises a pharmaceutically acceptable carrier.

15 18. The method of claim 15, wherein the composition is administered locally or systemically.

19. The method of claim 18, wherein the local administration is an intratumoral injection.

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20. The method of claim 15, wherein the reactive oxygen species comprise singlet oxygen.